



EARTH SCIENCE DATA

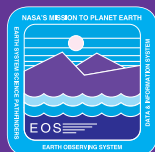
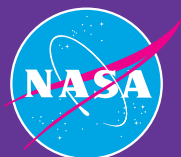
Information, Data, and Services From the EOSDIS DAACs
and Other Cooperating Data Centers

This radar image of the New York City metropolitan area was acquired by the SIR-C/X-SAR instruments on board the Space Shuttle Endeavour on October 10, 1994.

A detailed description is provided on the inside pocket.



For information on NASA's Earth Observing System Data and Information System (EOSDIS) and its Distributed Active Archive Centers (DAACs), access the Web page at <http://eos.nasa.gov>



NEW YORK CITY IMAGE

The cover shows a colorized image of New York City that was acquired by SIR-C/X-SAR, which stands for Spaceborne Imaging Radar-C/X-Band Synthetic Aperture Radar. The radar was operated from the Space Shuttle Endeavour. The image shows the intensity of the radar-produced microwaves that bounce back from the Earth's surface to the radar.

Although this image looks similar to an aerial photograph, it contains different information because the returned radar energy is largely a function of surface roughness and form. Radar images can be obtained at night and through cloud cover. This feature is very useful when information is wanted about areas that are frequently cloud covered or dark, such as the tropics or the polar

regions. In this image, the water appears dark blue because it is smooth and reflects little of the radar energy back to the radar; instead, the radar energy bounces off into space, away from the radar. Bridges, which reflect microwaves, appear as bright lines across the bodies of water, including the Hudson River. Other dark areas within the general land mass are lakes and parks (which are smooth to a radar); Central Park in Manhattan shows as a rectangular area of low return. Very bright areas correspond to areas of the city where the streets are oriented such that very high amounts of radar energy are returned to the radar after bouncing off the street and a wall. This type of return is known as a corner reflector effect. Bright returns from ships in

the harbor are created by this effect. Some areas of intermediate brightness near areas of water correspond to rough wetland vegetation; in this case, an intermediate amount of energy is returned to the radar.

Images such as this have been used to provide information on forests and deforestation, flood extent, crop growth, sea ice, and land displacement due to earthquakes. Radar images have also been used to detect oil spills (oil acts to create a smoother surface than that of the surrounding open water). Geologists also use radar imagery for structural information and mineral mapping. In addition, imagery has been used to detect subsurface features in arid regions.

SIR-C was developed by NASA's Jet Propulsion Laboratory (JPL) as part of the Mission to Planet Earth program. X-SAR was developed for the German and Italian space agencies. Complemented by aircraft and ground studies, the SIR-C/X-SAR data have given scientists clearer insights into those environmental changes caused by nature and those induced by human activity.

Information was provided by JPL radar scientists.

This image is available on the World Wide Web at <http://www.jpl.nasa.gov/radar/sircxsar/nyc.html>